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# **New Source Review Notice of Construction Application for Construction or Modification of a Stationary Source; Criteria/Toxic Air Pollutant Emissions Associated with Transition of the Plutonium Finishing Plant Complex**

Prepared for the U.S. Department of Energy  
Assistant Secretary for Environmental Management



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Department of Energy**  
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## TERMS

1		
2		
3		
4	ALARA	as low as reasonably achievable
5	ARAR	applicable or relevant and appropriate requirements
6	ASIL	acceptable source impact level
7		
8	BACT	best available control technology
9		
10	CERCLA	<i>Comprehensive Environmental Response, Compensation, and Liability Act of</i>
11		<i>1980</i>
12		
13	DOE-RL	U.S. Department of Energy, Richland Operations Office
14		
15	Ecology	Washington State Department of Ecology
16	EPA	U.S. Environmental Protection Agency
17		
18	HEPA	high-efficiency particulate air
19		
20	NOC	notice of construction
21	NOCA	notice of construction application
22		
23	PA	protected area
24	PFP	Plutonium Finishing Plant
25	PFP EIS	<i>Final Environmental Impact Statement Plutonium Finishing Plant Stabilization</i>
26	PRF	Plutonium Reclamation Facility
27	PSD	prevention of significant deterioration
28		
29	RACT	reasonably available control technology
30	RAWP	removal action work plan
31	RWP	radiation work permit
32		
33	SNM	special nuclear material
34	SQER	small quantity emission rate
35		
36	TAP	toxic air pollutant
37	T-BACT	best available control technology for toxics
38		
39	WAC	Washington Administrative Code
40	WDOH	Washington State Department of Health

## METRIC CONVERSION CHART

Into metric units

Out of metric units

If you know	Multiply by	To get	If you know	Multiply by	To get
<b>Length</b>			<b>Length</b>		
inches	25.40	millimeters	millimeters	0.03937	inches
inches	2.54	centimeters	centimeters	0.393701	inches
feet	0.3048	meters	meters	3.28084	feet
yards	0.9144	meters	meters	1.0936	yards
miles (statute)	1.60934	kilometers	kilometers	0.62137	miles (statute)
<b>Area</b>			<b>Area</b>		
square inches	6.4516	square centimeters	square centimeters	0.155	square inches
square feet	0.09290304	square meters	square meters	10.7639	square feet
square yards	0.8361274	square meters	square meters	1.19599	square yards
square miles	2.59	square kilometers	square kilometers	0.386102	square miles
acres	0.404687	hectares	hectares	2.47104	acres
<b>Mass (weight)</b>			<b>Mass (weight)</b>		
ounces (avoir)	28.34952	grams	grams	0.035274	ounces (avoir)
pounds	0.45359237	kilograms	kilograms	2.204623	pounds (avoir)
tons (short)	0.9071847	tons (metric)	tons (metric)	1.1023	tons (short)
<b>Volume</b>			<b>Volume</b>		
ounces (U.S., liquid)	29.57353	milliliters	milliliters	0.033814	ounces (U.S., liquid)
quarts (U.S., liquid)	0.9463529	liters	liters	1.0567	quarts (U.S., liquid)
gallons (U.S., liquid)	3.7854	liters	liters	0.26417	gallons (U.S., liquid)
cubic feet	0.02831685	cubic meters	cubic meters	35.3147	cubic feet
cubic yards	0.7645549	cubic meters	cubic meters	1.308	cubic yards
<b>Temperature</b>			<b>Temperature</b>		
Fahrenheit	subtract 32 then multiply by 5/9ths	Celsius	Celsius	multiply by 9/5ths, then add 32	Fahrenheit
<b>Energy</b>			<b>Energy</b>		
kilowatt hour	3,412	British thermal unit	British thermal unit	0.000293	kilowatt hour
kilowatt	0.94782	British thermal unit per second	British thermal unit per second	1.055	kilowatt
<b>Force/Pressure</b>			<b>Force/Pressure</b>		
pounds (force) per square inch	6.894757	kilopascals	kilopascals	0.14504	pounds per square inch

06/2001

Source: *Engineering Unit Conversions*, M. R. Lindeburg, PE., Third Ed., 1993, Professional Publications, Inc., Belmont, California.

**NEW SOURCE REVIEW NOTICE OF CONSTRUCTION APPLICATION FOR  
CONSTRUCTION OR MODIFICATION OF A STATIONARY SOURCE;  
CRITERIA/TOXIC AIR POLLUTANT EMISSIONS ASSOCIATED WITH  
TRANSITION OF THE PLUTONIUM FINISHING PLANT COMPLEX**

**1.0 INTRODUCTION**

The U.S. Department of Energy, Richland Operations Office (DOE-RL) is continuing to transition the existing Plutonium Finishing Plant (PFP) Complex to a state of low-risk, low-cost, long-term surveillance and maintenance pending final disposition. The purpose of this transition is to mitigate radiological and chemical hazards associated with structures (and any remaining processing equipment and ancillary hardware) in the PFP Complex such that the main plutonium processing structures at the PFP Complex would be ready for final disposition to be determined under the *Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980*.

This document is a revision to an earlier Notice of Construction (NOC) Application (DOE/RL-2004-08, Revision 0, *New Source Review Notice of Construction Application for Construction or Modification of a Stationary Source; Criteria/Toxic Air Pollutant Emissions Associated with Deactivation of the Plutonium Finishing Plant Complex*). The Washington State Department of Ecology (Ecology) issued an approval order (DE04NWP-001, Ecology 2004) based on the aforementioned NOC application (NOCA).

Applicable CERCLA documentation, including an Ecology-approved removal action work plan identifying specific radioactive air emissions monitoring requirements identified through the applicable or relevant and appropriate requirements (ARARs) identification process, has been approved (DOE/RL-2005-13, Rev. 0, *Action Memorandum for the Plutonium Finishing Plant Above-Grade Structures Non-Time Critical Removal Action*, approved May 2005). Implementation of CERCLA actions has been initiated; activity-specific removal action work plans (RAWPs) have been prepared (e.g., DOE/RL-2005-14, Rev. 0, *Removal Action Work Plan for the Plutonium Finishing Plant Above-Grade Structures: Facility Deactivation*, approved May 2005). Diffuse and fugitive emissions associated with the activities identified in approved work plans are not part of this NOCA. However, as appropriate, any portions of this NOCA necessary to support process operations outside of the CERCLA scope will remain in effect concurrent with the aforementioned CERCLA documentation.

This NOCA also identifies activities supporting security enhancements at the PFP. The security enhancements activities will be conducted concurrently with ongoing deactivation activities identified for the PFP Complex.

Therefore, a revised approval is being requested to address PFP transition. This revised NOCA recognizes CERCLA documentation/authorization for a portion of the previously approved work scope, as well as a transition mission in support of security enhancements.

**2.0 PROJECT DESCRIPTION**

The existing PFP Complex in the 200 West Area of the Hanford Site (Figure 1) historically was used to conduct plutonium processing, storage, and support operations for national defense.

The proposed activities involve transitioning the PFP Complex to a state of low-risk, low-cost, long-term surveillance and maintenance pending final disposition. Transition was initiated as a deactivation effort,



approved in Ecology 2004. Transition includes: (1) the previous scope of deactivation [as approved by Ecology (Ecology 2004)]; and (2) security enhancements activities described herein. The scope of this NOCA does not include actions and activities conducted under approved CERCLA documentation [i.e., the aforementioned action memorandum (DOE/RL-2005-13) and RAWP (e.g., DOE/RL-2005-14)].

## 2.1 TRANSITION ACTIVITIES

All work would be performed in accordance with the approved radiological control procedures and as low as reasonably achievable (ALARA) program requirements as implemented by the project radiological control manual, as amended. These requirements would be carried out through the activity work packages and associated radiation work permits (RWP).

The non-radiological constituents that may be present in material generated through holdup removal and deactivation and facility cleanout activities has been grouped into the following five categories.

- (1) Impurities that are typically present in plutonium product nitrate, oxide, and metal
- (2) Impurities that could be present from the process and laboratory chemicals. This includes laboratory standards and sources.
- (3) Constituents that could result from typical glovebox operations for plutonium that escapes the process equipment, pipes, tanks, storage cans, etc.
- (4) Constituents that could be present as a result of facility cleanout activities involving paint removal, concrete scraping, glovebox and equipment removal, interior wall demolition, etc.
- (5) Constituents that could be present due to general industrial transition activities, including excavation and demolition of ancillary buildings.

Deactivation of the PFP Complex was addressed (DOE/RL-2004-08, Revision 0). Specific actions included the following:

- Draining and/or de-energizing systems as appropriate
- Stabilizing contaminated areas (e.g., with fixatives, sealants, paint)
- Stabilizing or removing gloveboxes, process equipment, tanks, piping, fume hoods, ventilation systems, and support equipment
- Removing fencing and paved parking areas adjacent to facilities
- Installing alternate environmental monitoring, surveillance, and safety components (e.g., lighting, fencing) if required
- Removing/packaging radioactive and hazardous materials and waste, including stabilization and/or removal of asbestos, and removal, cleanup, and disposition of polychlorinated biphenyls and other regulated materials and transportation to waste management facilities
- Removing equipment and system components

- 1 • Size-reducing process equipment for disposal as waste
- 2
- 3 • Packaging/repackaging and storing waste containers in air spaces not being ventilated through
- 4 approved emission units or outside pending transport to approved locations/facilities pending final
- 5 disposition
- 6
- 7 • Performing physical or chemical treatment processes (e.g., neutralization, solidification, blending,
- 8 filtering) to render a material less hazardous or to reduce the volume
- 9
- 10 • Excessing surplus equipment
- 11
- 12 • Removing excess combustible material
- 13
- 14 • Disconnecting utilities, piping, and network service systems (if the systems are not necessary to
- 15 maintain required environmental monitoring or building safety systems), including associated
- 16 excavation. Note that potential excavation would be minimal and limited to the immediate vicinity of
- 17 utilities and piping
- 18
- 19 • Ensuring adequate freeze and heat protection
- 20
- 21 • Stabilizing, consolidating, or removing outside contaminated areas within the PFP Complex
- 22
- 23 • Sealing cracks, gratings, and openings to the building exterior, and repairing roofs
- 24
- 25 • Removing or reducing radioactive or hazardous contamination from facilities and equipment by
- 26 washing, heating, chemical or electrochemical action, mechanical cleaning, or other techniques
- 27
- 28 • Removing residual plutonium holdup material, which might remain throughout the PFP Complex
- 29 after stabilization activities described in the *Final Environmental Impact Statement Plutonium*
- 30 *Finishing Plant Stabilization* (DOE/EIS-0244-F) (PFP EIS) have been completed; packaging residual
- 31 plutonium holdup meeting waste acceptance criteria for shipment to an onsite waste management
- 32 facility, or thermally stabilizing material in muffle furnace operations and packaging for storage in
- 33 existing PFP Complex vaults
- 34
- 35 • Designing and executing modifications to operating systems and/or structures necessary to place a
- 36 facility in surveillance and maintenance, pending demolition
- 37
- 38 • Conducting final process operations to stabilize or eliminate residual operational materials or
- 39 effluents, such as final process runs; cleaning vessels, pits and trenches; operation of small
- 40 evaporators; flushing piping systems; and removal or replacement of filters
- 41
- 42 • Demolishing non-process ancillary buildings
- 43
- 44 • Installing alternate, temporary power sources (e.g., diesel generators)
- 45
- 46 • Size-reducing and/or repackaging of fuel.
- 47
- 48

## 2.2 SECURITY ENHANCEMENTS ACTIVITIES

The scope of this NOCA also includes those activities necessary to support enhanced special nuclear material (SNM) storage at the PFP Complex, while continuing to be protective of personnel, the public, and the environment during ongoing deactivation. Security enhancements activities would include those actions foreseeably necessary for implementation of the proposed action, such as associated transportation activities, waste removal and disposal, and award of grants and contracts.

Specific actions associated with security enhancements activities could include the following work involving the potential for radioactive contamination:

- Excavations, inside and outside the PFP protected area (PA) to support installation of utilities and security-related devices and structures (e.g., barricades, patrol offices) and relocation of displaced activities. Security enhancements activities will require some excavation in areas of potential belowgrade contamination. In addition to excavations for building and structure foundations, it is estimated that approximately 5,000 linear feet of belowgrade ducting will be installed, a portion of the water line will require replacement, connections to sewer and water lines will be required.
- Modifications to existing structures (e.g., moving walls, doors, railing, security monitoring equipment, electrical equipment upgrades) and/or construction of new buildings.
- Continued operations at 2736-Z/ZB Buildings for 3013-container packaging systems monitoring and maintenance.

There would be no modifications to the existing abatement equipment associated with registered stacks.

## 2.3 EMISSIONS

*Location/physical dimensions, flowrate/temperature, and gas composition of all emissions.*

The non-radiological constituents that may be present in material generated through holdup removal and deactivation and facility cleanout activities have been grouped into five categories, as previously noted: (1) impurities that are typically present in plutonium product nitrate, oxide, and metal, (2) impurities that could be present from the process chemicals, (3) constituents that could result from typical glovebox operations during plutonium production that escaped the process equipment, pipes, tanks, storage cans, etc., (4) constituents that could be present as a result of facility cleanout activities involving paint removal, concrete scarfing, glovebox and equipment removal, interior wall demolition, etc., and (5) constituents that could be present due to general industrial transition activities, including excavation and demolition of ancillary buildings. It is noted that most of the toxic air pollutants (TAPs) that will be potentially emitted as a result of the PFP Complex transition, and/or security enhancements activities, have been previously emitted from PFP.

These aforementioned chemicals were addressed in previous documentation (Rasmussen 2000) and are provided as an illustration of materials present as a result of historical processing activities. A more detailed discussion of potential emissions associated with transition activities is provided in Section 7.0.

The following emission units represent all PFP non-CERCLA stationary sources<sup>1</sup>. Details regarding stack height, flow rate, and operating temperature are shown in Table 1.

<sup>1</sup> Emission points at PFP that have transitioned to CERCLA, and not included in the scope of this NOCA are the 296-Z-3, -14, and -15 Stacks.

Table 1. Emission Unit Stack Parameters in Calendar Year 2002<sup>a</sup>.

Emission unit	Stack height [feet (meters)]	Average operating flow rate [cubic feet per minute (cubic meters per second)]
291-Z-1	200 (61)	290,000 (136)
296-Z-5	28 (8.5)	4,156 (2.0)
296-Z-6	15 (4.5)	6,684 (3.1)
296-Z-7	28 (8.5)	4,156 (2.0)

<sup>a</sup> From DOE/RL-2004-08, Revision 0.

### 2.3.1 291-Z-1 Stack

The 291-Z-1 Stack releases filtered emissions from the 234-5Z, 236-Z [Plutonium Reclamation Facility (PRF)], and 242-Z Buildings (DOE/RL-2004-08, Revision 0).

### 2.3.2 296-Z-5 Stack

The 296-Z-5 Stack exhausts filtered air from the 2736-ZB Building, used for shipping and receiving operations (DOE/RL-2004-08, Revision 0).

### 2.3.3 296-Z-6 Stack

The 296-Z-6 Stack exhausts filtered air from the 2736-Z Building used for storage (DOE/RL-2004-08, Revision 0).

### 2.3.4 296-Z-7 Stack

The 296-Z-7 Stack exhausts filtered air from the 2736-ZB Building used for stabilization and packaging of plutonium-bearing materials (DOE/RL-2004-08, Revision 0).

## 2.4 DIFFUSE/FUGITIVE SOURCES

Unfiltered releases could occur from various activities addressed in Section 3.0. Specifically, these diffuse and fugitive emissions could result from minor amounts of excavation, packaging/repackaging and storage of waste containers, and ancillary building demolition.

## 2.5 MISCELLANEOUS EMISSION SOURCES

It is anticipated that a variety of miscellaneous small portable/temporary emission sources may be required to support PFP transition and security enhancements activities. Such sources could include commercially-available generators, pumps and/or compressors to supply power and/or other support functions for transition and security enhancements. It is expected that none of these units would exceed 500 horsepower.

Due to uncertainties regarding specific type, size and usage of the aforementioned equipment, diesel fuel consumption previously was set (Ecology 2004) at a voluntary limit of 50,000 gallons per year. The resulting estimated emissions [based on U.S. Environmental Protection Agency (EPA) standard factors, in tons per year] are: NO<sub>x</sub> (1); CO (0.2); SO<sub>x</sub> (0.07); PM (0.07); CO<sub>2</sub> (37); aldehydes (0.02); and total organic carbon (0.08). These emissions are in addition to those estimated for transition (refer to Section 5.0, Table 2). Diesel fuel consumption was identified as a limitation in the previous approval order (Ecology 2004) and will continue to be tracked to verify that criteria emissions remain below the threshold levels stated herein.

## 2.6 PROCESS FLOW DIAGRAMS

*Process flow diagrams of each emission unit.*

Figures 2, 3, 4, 5, and 6 show the existing ventilation systems for 291-Z-1 (Figures 2 and 3), 296-Z-5, 296-Z-6, and 296-Z-7, respectively, described in Section 4.2. These emission units' process flow diagrams are provided for perspective to explain controls in place for the historical processing of plutonium-bearing materials. These controls will remain in place pending final facility disposition.

## 3.0 CONTROL EQUIPMENT DESCRIPTION

*Control equipment description and reference to flow diagrams.*

The radioactive particulate emissions from the emission units previously identified in Table 1 are controlled by testable stages of high-efficiency particulate air (HEPA) filters (refer to Section 4.3, Figures 2, 3, 4, 5, and 6). The radioactive air emissions are regulated under *Washington Administrative Code* (WAC) 246-247. Washington State Department of Health (WDOH)-approved activities associated with ongoing activities at the PFP Complex have multiple active radioactive air emissions NOCs, as incorporated in the *Hanford Site Air Operating Permit*.

Transition activities will use these existing controls, resulting in low levels of emissions of criteria pollutants and/or TAPs. These emissions, summarized in Section 5.0, are well below small quantity emission rates (SQER) described in WAC 173-460-080. Therefore, no additional controls are proposed for this process.

## 3.1 CONTROL EQUIPMENT EFFICIENCIES

*Control equipment efficiencies and operational requirements.*

Ventilation systems, for the structures that exhaust through registered stacks with HEPA filtration, would be operational during transition activities as practicable. An exception includes shutting down a ventilation system for a short period of time to allow fogging operations, sampling, or routine maintenance. HEPA filtration has a minimum efficiency of 99.95 percent for particles with a median diameter of 0.7 micron.

Appropriate controls such as water, fixatives, covers, containment tents, or windscreens would be applied, as needed. Soil removed during excavation activities would be covered until replaced into the excavation or otherwise dispositioned.

The transition operations would be performed in accordance with the controls specified in PFP work documents (RWP, work package, etc.) to satisfy the principles of ALARA and requirements of industrial hygiene and safety. For example, as appropriate before starting deactivation activities (such as isolating utilities and piping or dismantling the exhaust system), removable contamination in the affected area(s) could be reduced to ALARA. Measures such as decontamination solutions, expandable foam, fixatives, or glovebags also could be used to help reduce the spread of contamination. The aforementioned work documents would be available for inspection upon request.

### 3.2 BACT OR T-BACT

*Demonstrate compliance with BACT or T-BACT, as applicable [top-down assessment required for significant emissions such as those greater than SQER]*

Criteria and toxic air pollutant emissions are estimated (refer to Table 2, Section 5) to be low for activities associated with the transition of the PFP Complex. Criteria emissions do not meet the definition of significant, thus do not trigger prevention of significant deterioration (PSD) review. In fact, the criteria air emissions expected are below the threshold values for exemption, as specified under WAC 173-400-110(5). Therefore, best available control technology (BACT) is satisfied by maintaining annual levels under the exempt threshold. If, in the future, the project scope changes and meets the definition of a modification that increase a criteria pollutant above the threshold level, then an abbreviated BACT assessment will be required for that constituent as supporting documentation for the NOCA.

The majority of toxic air pollutant emissions are anticipated to be in particulate form. Therefore, best available control technology for toxics (T-BACT) for those mixed (i.e., radioactive with non-radioactive particulates) will continue to utilize the abatement controls identified in Section 5.0 (e.g., HEPA filtration), which are required controls for NOC coverage and regulation by the WDOH. Additional process controls will be employed for particulate control (e.g., decontamination solutions, expandable foam, fixatives, glovebags, air movers for containment tents). These process controls for the remaining emissions (i.e., below acceptable source impact levels (ASILs) and/or SQERs) are proposed to satisfy best available control technology for toxics (T-BACT), as well as reasonable precautions in complying with the reasonably available control technology (RACT) for general sources emitting any fugitive dust emissions.

In conclusion, no additional controls are proposed/warranted in satisfying BACT, T-BACT, and/or RACT for the described activities.

### 3.3 PROPOSED CRITERIA/TOXIC CONTROLS

Many of the emission controls used during the transition/security enhancements activities are administrative, based on RACT principles and include ALARA techniques. It is proposed that controls in place to address radioactive air emissions satisfy RACT for transition activities that will exit a stack (refer to Section 2.3.8) in the PFP Complex. Further, as a result of the following discussion in Section 5.0, it is proposed that the existing required controls at the PFP Complex are adequate to satisfy the requirements for criteria and/or TAPs emissions. Therefore, no additional emission unit-based controls are proposed for this process.

## 4.0 AIRBORNE EMISSIONS MONITORING SYSTEMS

The following sections address airborne emissions monitoring systems.

### 4.1 DESCRIPTION

*Provide description and capability of monitor/sampling systems, if required.*

- There is no existing monitoring for criteria pollutants or TAPs at the PFP Complex.
- The projected emission levels of any pollutants regulated by WAC 173-400 or -460 from the transition of the PFP Complex are so low that the levels are not practical to measure.
- A monitoring system for TAPs at such a low emission rate economically is not feasible.
- As a result, no additional monitoring systems are proposed for this process.

### 4.2 AIR OPERATING PERMIT REQUIREMENTS

*Propose method to satisfy AOP periodic monitoring requirements.*

Emissions from the transition activities (refer to Sections 2.1 and 2.2) are estimated to be below the thresholds identified in WAC 173-400-110(5)(d) and the TAPs emissions are well below the SQER described in WAC 173-460-080. Thus since the scope of the activity is to deactivate the PFP Complex (i.e., ceasing operations), it is proposed that no AOP periodic monitoring is required for this transition of the PFP Complex.

## 5.0 EMISSIONS ESTIMATION AND AIR IMPACT ANALYSIS

Emissions estimates were developed for PFP Complex transition activities based on residual levels of process materials resulting in contamination remaining from historic plutonium recovery/stabilization operations and decontamination solutions projected to be used for transition. Impacts are based on the summation of total emissions from point sources and diffuse/fugitive.

### 5.1 CRITERIA/TOXIC AIR POLLUTANTS

*Estimate of all potential and actual emissions for criteria/toxic air pollutants [based on hours of operation per year, rate of operation, emission factors, control efficiencies, and a comparison of baseline to proposed emissions (modifications only)]*

Table 2 provides an estimation of releases of total new source material for PFP Complex transition activities (additional potential emissions due to miscellaneous sources are discussed in Section 2.3). Table 2 was developed from information associated with deactivation of a similar facility (Hebdon 2002).

Table 2. Estimated Release of New Source Materials for PFP Complex Transition.

Constituent	Anticipated source form	Mass available to be disturbed (pounds of material)	Total estimated release (pounds)	Limit: Criteria Exemption Threshold (pounds)	Below SQER (Y/N)
Sodium hydroxide	Dried residual solid from process chemical	50	10		Y
Aluminum nitrate nonahydrate	Dried residual solid from process chemical	50	10		Y
Nitric acid	Dried residual solid from process chemical	50	10	4,000 <sup>a,b</sup>	Y
Lead	From paint as lead chromate	60	6	10 <sup>a</sup>	Not applicable <sup>e</sup>
Polychlorinated biphenyl	From paint	25	5		Not applicable
Toluene	From paint	85	17	<sup>b</sup>	Y
Xylene	From paint	85	17	<sup>b</sup>	Y
Methyl isobutyl ketone	From paint	65	13	<sup>b</sup>	Y
Titanium dioxide	From paint	40	8		Not applicable
Iron oxide	From Hanford ash	-	-		Y
Silicon oxide	From Hanford Ash	-	-		Not applicable
Carbon	From Hanford Ash	-	<5	4,000 <sup>b</sup>	Not applicable
Carbon tetrachloride	From excavation activities	15	15		Y
Miscellaneous particulate matter		195,000	1,950	2,500 <sup>a</sup>	Not applicable
Nitric acid	From decontamination solution #1	900	180	4,000 <sup>a,b,c</sup>	Y
Hydrochloric acid	From decontamination solution #1	200	40	<sup>c</sup>	Y
Ammonium fluoride	From decontamination solution #1	200	40	<sup>c</sup>	Not applicable
Citric acid	From decontamination solution #1	100	20	<sup>c</sup>	Not applicable
Ethylene glycol monobutyl ether	From decontamination solution #1	550	11	<sup>b,c</sup>	Not applicable
Triethylamine	From decontamination solution #1	10	2	<sup>b,c</sup>	Y
Isopropanol	From decontamination solution #1	100	20	<sup>b,c</sup>	Y
Potassium hydroxide	From decontamination solution #1	200	40	<sup>c</sup>	Y
Cerium nitrate	From decontamination solution #2	6,100	1,220	<sup>d</sup>	Not applicable
Lanthanum nitrate	From decontamination solution #2	200	40	<sup>d</sup>	Not applicable
Neodymium nitrate	From decontamination solution #2	150	30	<sup>d</sup>	Not applicable

<sup>a</sup> WAC 173-400-110(5)(d).<sup>b</sup> WAC 173-400-110(5)(d)(e); assume all of carbon converted to VOCs and/or all nitric acid to NO<sub>x</sub>.<sup>c</sup> The material safety data sheet (MSDS) for decontamination solution #1 indicates that it is comprised of constituents previously used at PFP in far greater volumes than proposed for this decontamination activity.<sup>d</sup> Decontamination solution #2 has been used previously at PFP and is included for completeness.<sup>e</sup> Not applicable because no ASIL documented.

SQER = small quantity emission rate.



## 5.2 DISPERSION MODELING METHODOLOGY

Dispersion modeling methodology is not applicable to the PFP Complex transition/security enhancements activities.

## 5.3 AIR QUALITY MODELING RESULTS

*Demonstrate compliance with new source review procedures and requirements for toxic air pollutants addressed under WAC 173-460-030, -040, -050, and -060; Model predicted ambient impacts, as required.*

Air quality modeling is not applicable to the PFP Complex transition/security enhancements activities.

## 6.0 PROPOSED CONDITIONS AND RESTRICTIONS

A summary of proposed approval order conditions and restrictions are provided in Appendix A. Final conditions and restrictions will be provided in the approval order issued by Ecology.

## 7.0 REFERENCES

DOE/EIS-0244-F, *Final Environmental Impact Statement Plutonium Finishing Plant Stabilization*, U.S. Department of Energy, Washington, D.C.

DOE/RL-2004-08, *New Source Review Notice of Construction Application for Construction or Modification of a Stationary Source; Criteria/Toxic Air Pollutant Emissions Associated with Deactivation of the Plutonium Finishing Plant Complex*, Rev. 0, U.S. Department of Energy, Richland, Washington.

DOE/RL-2005-13, *Action Memorandum for the Plutonium Finishing Plant Above-Grade Structures Non-Time Critical Removal Action*, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL-2005-14, *Removal Action Work Plan for the Plutonium Finishing Plant Above-Grade Structures: Facility Deactivation*, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

Ecology, 2004. Letter, M. Wilson, Ecology, to K. Klein, RL, "04-AMCP-0185, Transmittal of New Source Review Notice of Construction Application for Construction or Modification of a Stationary Source; Criteria/Toxic Air Pollutant Emissions Associated with Deactivation of the Plutonium Finishing Plant Complex," Order No. DE04NWP-001, dated March 30, 2004.

*Hanford Site Air Operating Permit*, 00-05-006, 2001, Washington State Department of Ecology, Washington State Department of Health, U.S. Environmental Protection Agency, Benton Clean Air Authority.

1 Hebdon, J.B., 2002, Letter, 03-RCA-0035, J.B. Hebdon, DOE-RL, to M.A. Wilson, Ecology, *Transmittal*  
2 *of Criteria Air Emission New Source Review Evaluation for Plutonium Finishing Plant's (PFP)*  
3 *232-Z Deactivation Activities*, dated November 5, 2002.  
4

5 Rasmussen, J.E., 2000, letter, 00-OSS-162, J.E. Rasmussen, DOE-RL, to M.A. Wilson, Ecology, *New*  
6 *Source Review for Applicability of Washington Administrative Code (WAC) 173-400 and*  
7 *WAC 173-460: Magnesium Hydroxide Precipitation*, dated March 2, 2000.  
8

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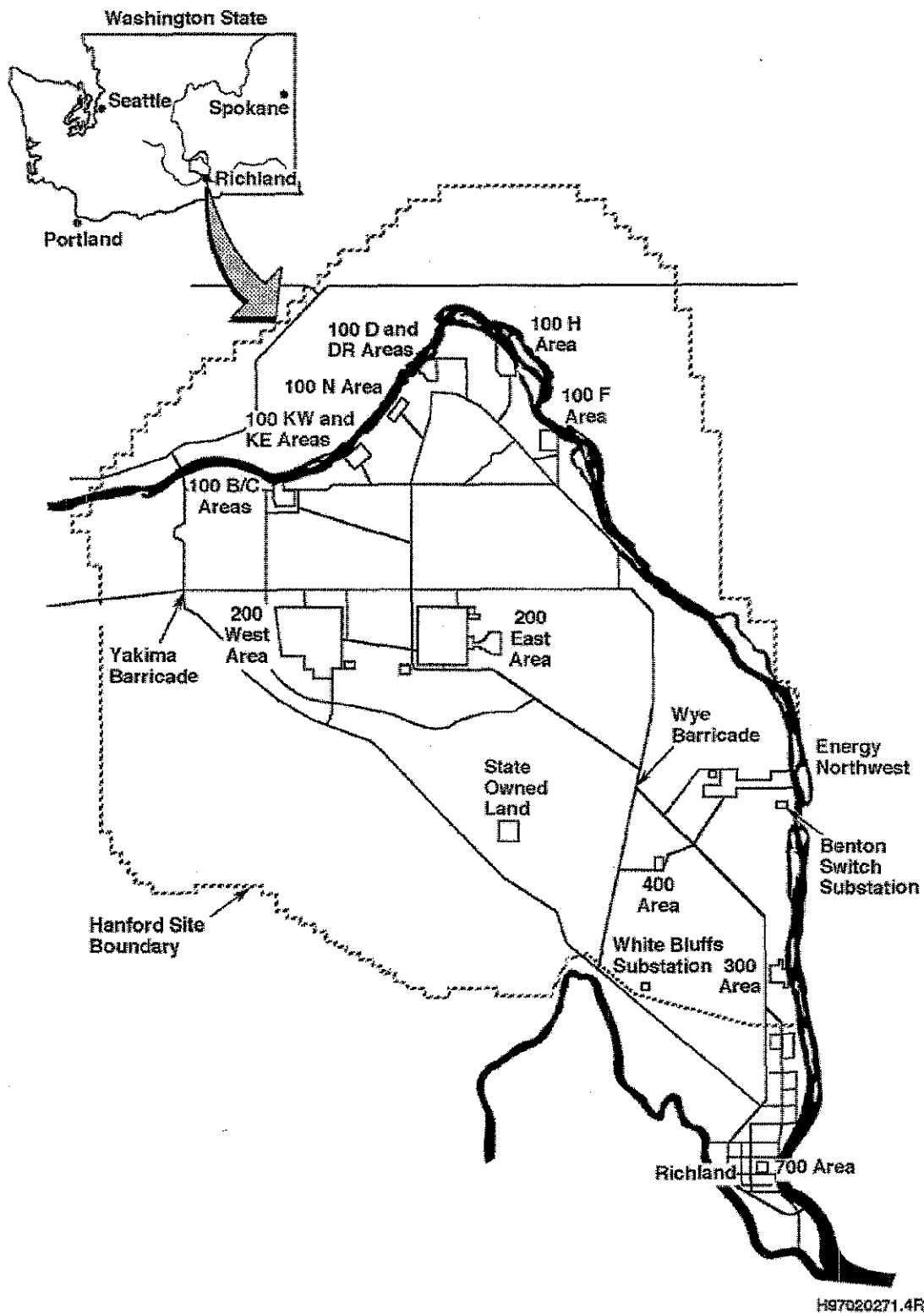


Figure 1. Hanford Site.

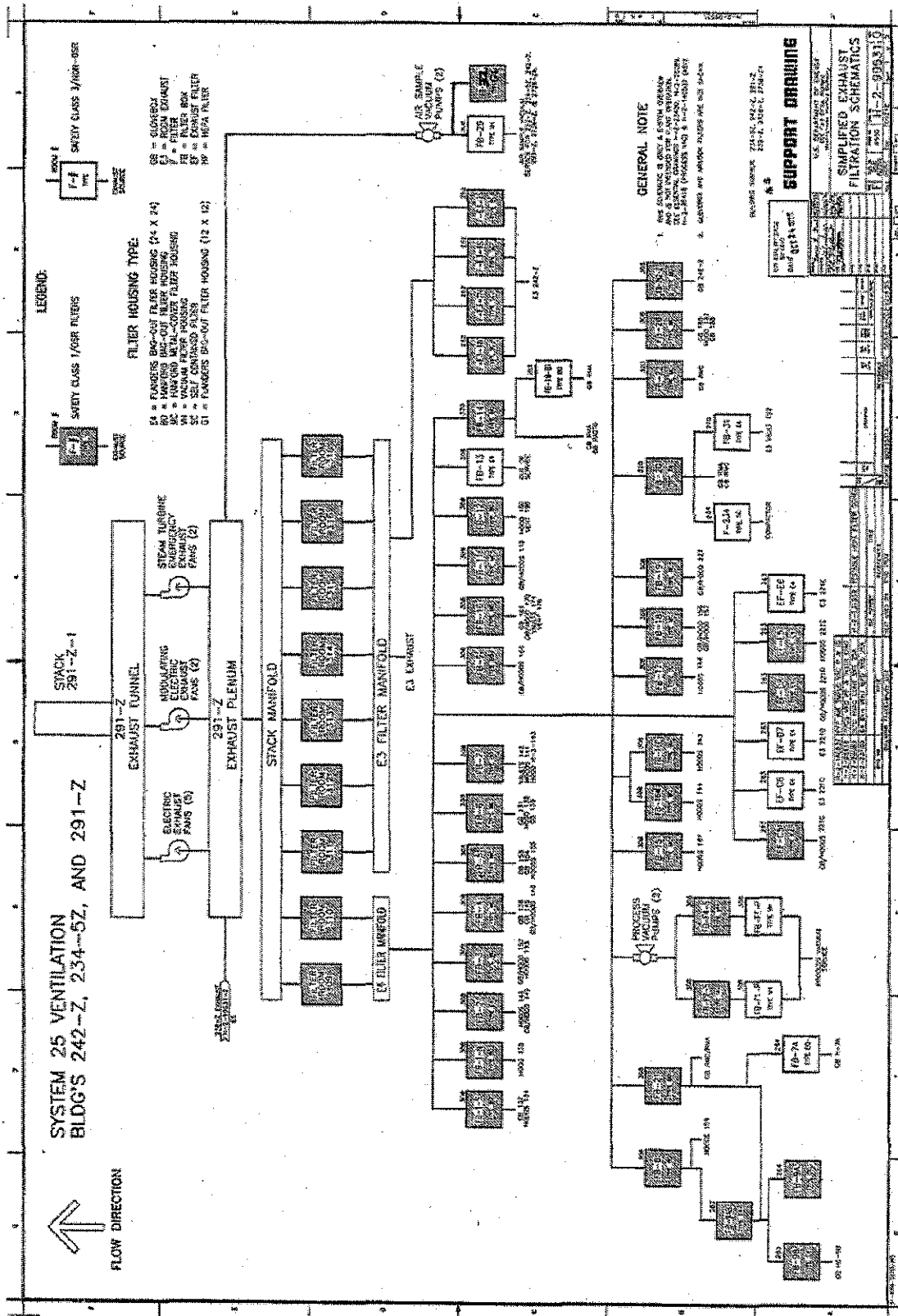


Figure 2. Ventilation Schematic for the 291-Z-1 Stack for the 242-Z and 234-5Z Buildings.

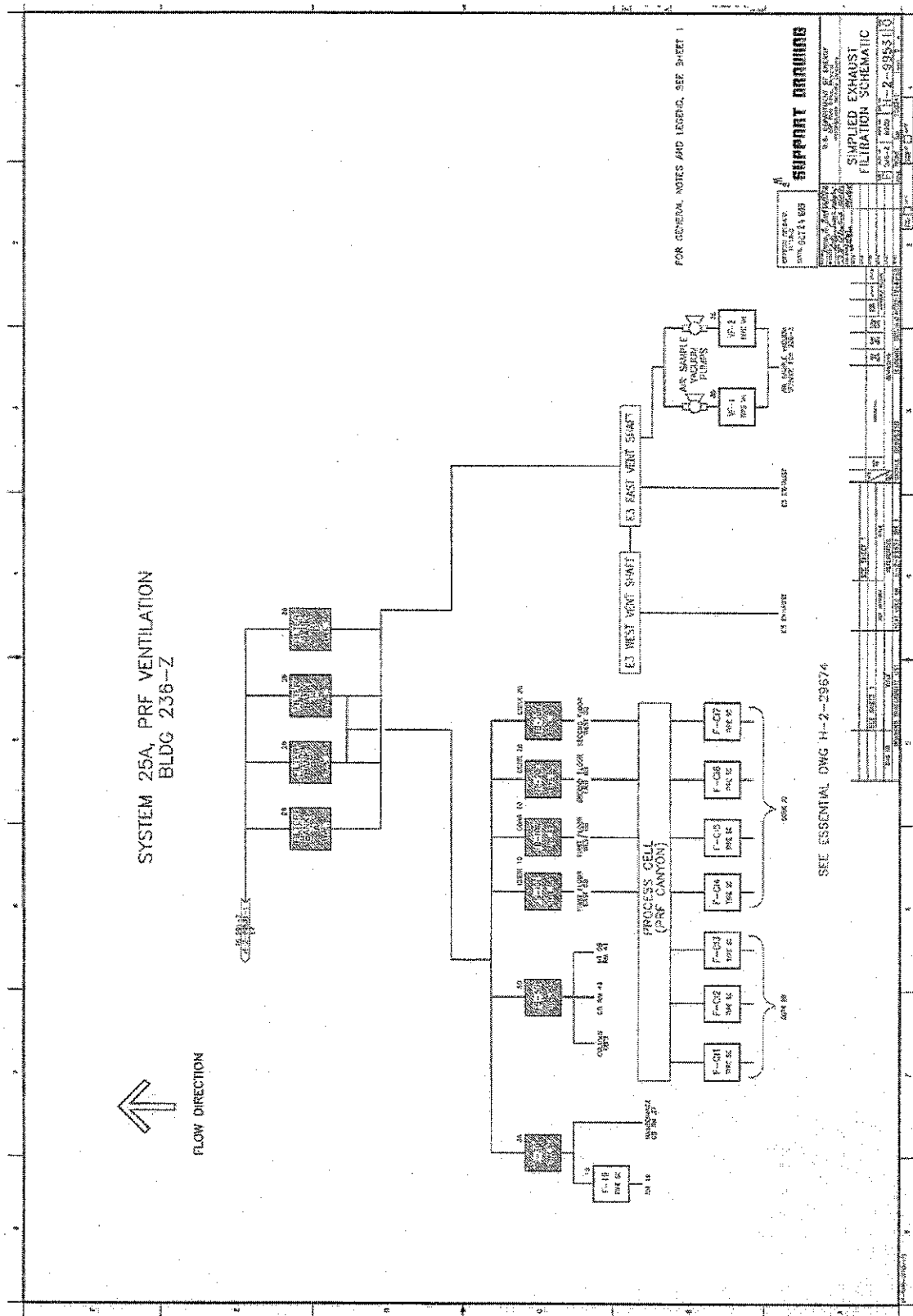


Figure 3. Ventilation Schematic for the 291-Z-1 Stack for the 236-Z Building (PRF).

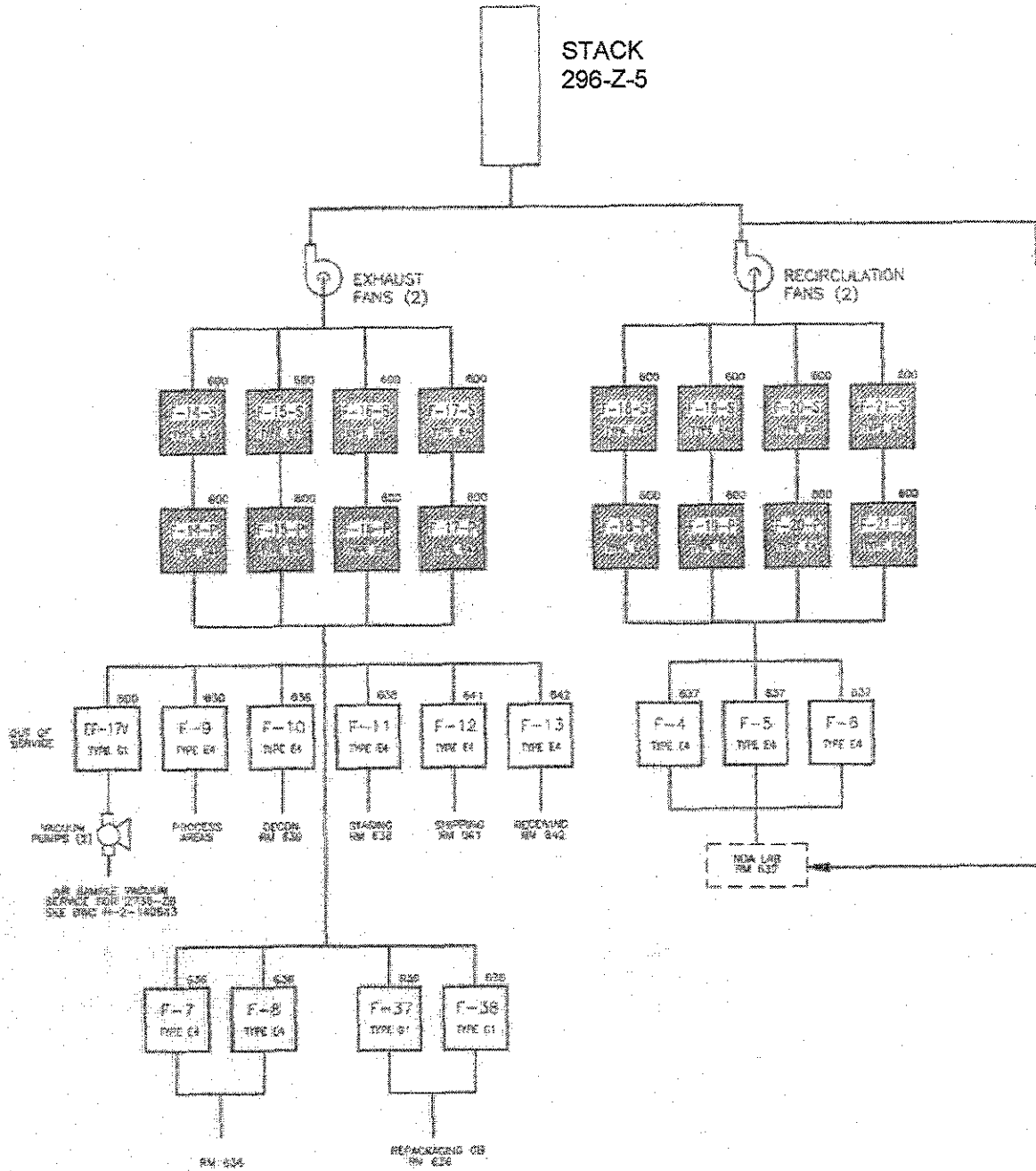


Figure 4. Ventilation Schematic for the 296-Z-5 Stack.

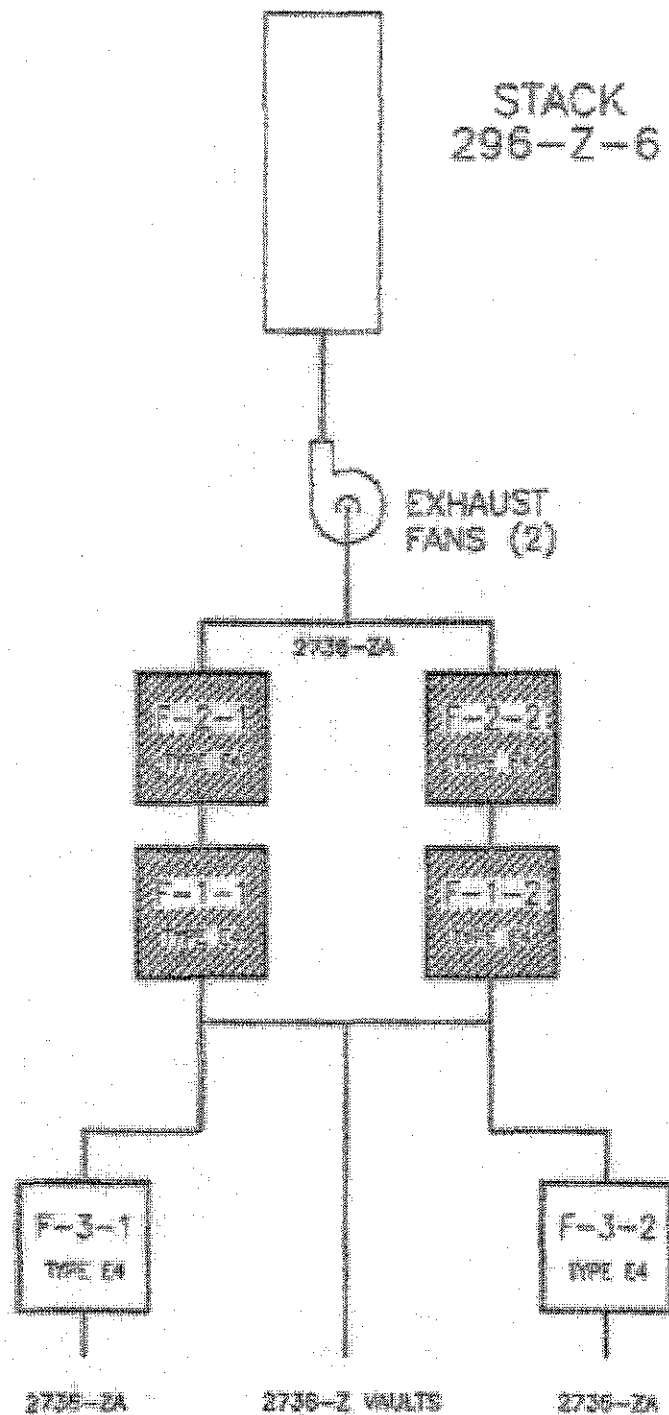


Figure 5. Ventilation System for the 296-Z-6 Stack.



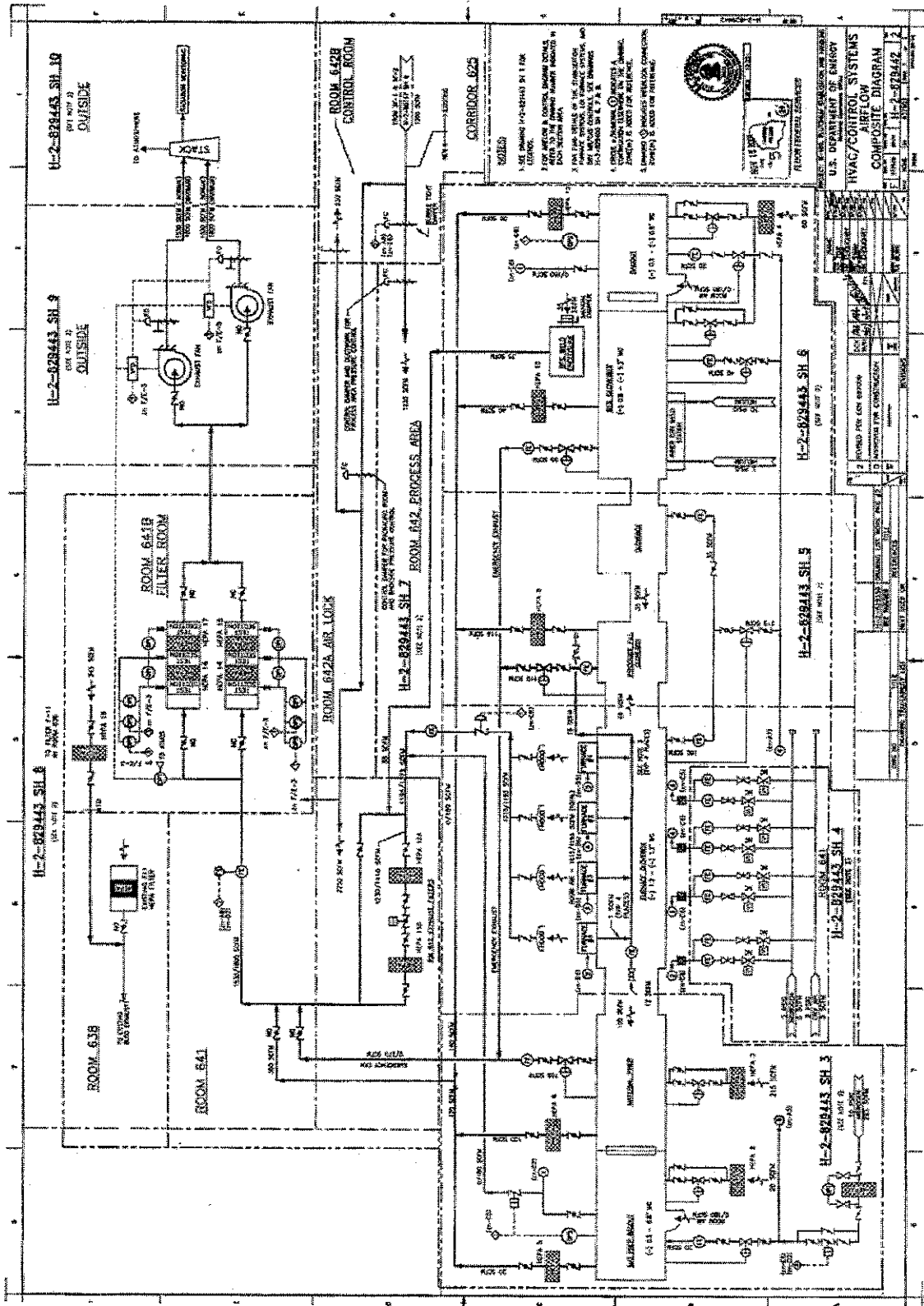


Figure 6. Ventilation System for the 296-Z-7 Stack (2736-ZB Building).

**APPENDIX A**

**PROPOSED APPROVAL ORDER FOR  
CRITERIA/TOXIC AIR POLLUTANT EMISSIONS ASSOCIATED WITH  
TRANSITION OF THE PLUTONIUM FINISHING PLANT COMPLEX**

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**APPENDIX A**

**PROPOSED APPROVAL ORDER FOR  
CRITERIA/TOXIC AIR POLLUTANT EMISSIONS ASSOCIATED WITH  
TRANSITION OF THE PLUTONIUM FINISHING PLANT COMPLEX**

**1.0 DETERMINATION**

The Washington State Department of Ecology (Ecology), pursuant to Revised Code of Washington (RCW) 70.94.152, WAC 173-400, and WAC 173-460 makes the following determinations:

- The facility, if operated as herein required, will be in accordance with applicable rules and regulations, as set forth in Chapter 173-400 WAC and 173-460 WAC, and the operation thereof will not result in ambient air quality standards being exceeded. Information submitted in the notice of construction application shows emissions will be below the threshold levels contained in WAC 173-400-110(5)(d), allowing exemption of the proposed activities from New Source Review under WAC 173-400-110.
- The proposed project, if constructed and operated as herein required, will provide all known, available, and reasonable methods of emission control.

**THEREFORE, IT IS ORDERED** that the project as described in said Notice of Construction application (NOCA), and more specifically detailed in plans, specifications, and other information, submitted to the Department of Ecology in reference thereto, is approved for construction, installation and operation, provided the following conditions are met:

**2.0 CONDITIONS AND RESTRICTIONS**

The following sections provide proposed specific and general approval conditions and restrictions.

**2.1 PROPOSED SPECIFIC APPROVAL CONDITIONS**

- A. The activities described in the NOCA will be permitted without requiring additional emission controls, provided that the emissions from the stacks, maintain best available control technology (BACT)/ best available control technology for toxics (T-BACT).
- B. For toxic compounds not requiring a T-BACT analysis, the emission limits shall be the Small Quantity Emission Rate (SQER). A modification submittal of a NOCA will be required if the total emissions of toxic air pollutants would exceed the emissions estimated in the NOCA and/or other limits specified under this order.
- C. A modification submittal of a NOCA would will be required if total emissions of criteria pollutants exceed the WAC 173-400-110 thresholds.
- D. Other, as provided by Ecology.

2.2 PROPOSED GENERAL APPROVAL CONDITIONS

Applicable records required under this approval will be maintained on file and made available for Ecology inspector requests. Emissions will be compiled into estimates and reported annually beginning as part of the Calendar Year 2006 nonradioactive inventory of airborne emissions, pursuant to WAC 173-400-105.

- A. **Fugitive Emissions:** A Fugitive Dust Control Program, consistent with EPA and Ecology guidelines, shall be developed and implemented. A copy of this Program shall be maintained on-site at all times in a place known to facility employees that are responsible for complying with the requirements contained therein and shall be retrievable by those employees at all times when activities regulated by the document are occurring. Program information shall be made available to Ecology upon request.
- B. **Compliance Assurance Access:** Access to the source by EPA or Ecology shall be allowed for the purposes of compliance assurance inspections. Failure to allow access is grounds for revocation of the Order approving the NOC.
- C. **Modification to Facility or Operating Procedures:** Any modification to any equipment or operating procedures, contrary to information in the NOCA, shall be reported to Ecology at least sixty (60) days before such modification. Such modification may require a new, or amended, NOC approval Order.
- D. **Emissions detrimental to persons or property:** No person shall cause or permit the emission of any air contaminant from any source if it is detrimental to the health, safety, or welfare of any person, or causes damage to property or business.
- E. **Activities Inconsistent with this Order:** Any activity undertaken by the Permittee or others, in a manner that is inconsistent with the NOCA, and this determination, shall be subject to Ecology enforcement under applicable regulations.
- F. **Obligations under Other Laws or Regulations:** Nothing in this Order shall be construed to relieve the Permittee of its obligations under any local, state, or federal laws, or regulations.
- G. Nothing in this approval shall be construed as obviating compliance with any requirement of law other than those imposed pursuant to the Washington Clean Air Act, and rules and regulations thereunder.
- H. Other, as provided by Ecology.

Any violation of such rules and regulations, or of the terms of this approval, shall be subject to the sanctions provided in Chapter 70.94 RCW.

2.2.1 Emission Controls

- A. As proposed in the NOCA no additional controls are required as a result of this order of approval. Good operating practices, as described in the NOCA, are in place and can be demonstrated upon inspection. Specific conditions are as follows: TBD
- B. Other, as provided by Ecology.

C. Emission control for particle or particle-bound toxic air pollutant (TAP) emissions are high-efficiency particulate air filtration. The use of this system as a required abatement control technology is covered under the radioactive air license, issued by the Washington State Department of Health, with conditions and limitation specified therein. Controls regulated under that approval are deemed sufficient to address concerns over de minimus criteria and/or particulate TAP emissions.

#### 2.2.2 Emission Monitors

No additional monitoring is required for the subject activities.

#### 2.2.3 Manuals

Existing Operations and Maintenance (O&M) manuals for all equipment, procedures, and controls associated with the proposed activities that have the potential to affect emissions to the atmosphere shall be followed. Manufacturers' instructions may be referenced. The O&M manuals shall be updated to reflect any modifications of the process or operating procedures. Copies of the O&M Manuals shall be available to Ecology upon request.

#### 2.2.4 Notifications and Submittals

Any required notifications and submittals required under these Approval Conditions shall be sent to:

Washington State Department of Ecology  
Nuclear Waste Program  
3100 Port of Benton Blvd.  
Richland, Washington 99354

#### 2.2.5 Recordkeeping

Specific records shall be kept on-site by the Permittee and made available for inspection by Ecology upon request. The records shall be organized in a readily accessible manner and cover a minimum of the most recent sixty (60) month period. The records to be kept shall include the following:

- A. Work Package activities and operations data and maintenance and operations records and logs for transition and security enhancements activities that are not addressed as CERCLA actions.
- B. Diesel/gasoline fuel consumption for miscellaneous units will be tracked to verify usage does not exceed the 50,000 gallons per calendar year used to calculate emission estimates. The basis for emission estimates will be maintained on file and available for inspection.

#### 2.2.6 Reporting

Pursuant to Section 2.5 of the NOCA, emissions from miscellaneous sources will be provided to Ecology as part of the diesel engine emission composite in the Hanford Site annual emissions inventory report under WAC 173-400-105. Internal records will be maintained and made available for inspection to verify compliance with the 50,000 gallon diesel fuel use limit for this stationary source.

**2.3 APPROVAL ORDER AND RESTRICTIONS**

Authorization may be modified, suspended or revoked in whole, or part, for cause including, but not limited to, the following:

1. Violation of any terms or conditions of this authorization;
2. Obtaining this authorization by misrepresentation, or failure to disclose fully all relevant facts.

The provisions of this authorization are severable and, if any provision of this authorization, or application of any provisions of this authorization to any circumstance, is held invalid, the application of such provision to their circumstances, and the remainder of this authorization, shall not be affected thereby.

Any person feeling aggrieved by this ORDER may obtain review thereof by application, within thirty (30) days of receipt of this ORDER, to:

Pollution Control Hearings Board  
P.O. Box 40903  
Olympia, Washington 98504-0903

Concurrently, copies of the application must be sent to:

Washington State Department of Ecology  
P.O. Box 47600  
Olympia, Washington 98504-7600

Washington State Department of Ecology  
3100 Port of Benton Blvd.  
Richland, Washington 99354

These procedures are consistent with the provisions of Chapter 43.21B RCW, and the rules and regulations adopted thereunder.

**DATED** at Richland, Washington, this the xxth day of March 2006.

**PREPARED AND REVIEWED BY:**

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Doug Hendrickson, P.E.

**APPROVED BY:**

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Jane Hedges

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